

METHOD AND APPARATUS USING MICROSCOPIC AND INTERFEROMETRIC BASED DETECTION

ABSTRACT

5 An integrated interferometric and intensity based microscopic inspection
system inspects semiconductor samples. A switchable illumination module provides
illumination switchable between interferometric inspection and intensity based
microscopic inspection modes. Complex field information is generated from
interference image signals received at a sensor. Intensity based signals are used to
10 perform the microscopic inspection. The system includes at least one illumination
source for generating an illumination beam and an integrated interferometric
microscope module for splitting the illumination beam into a test beam directed to the
semiconductor sample and a reference beam directed to a tilted reference mirror. The
beams are combined to generate an interference image at an image sensor. The tilted
15 reference mirror is tilted with respect to the reference beam that is incident on the
mirror to thereby generate fringes in the interference image. The system also includes
an image sensor for acquiring the interference image from the inteferometric
microscope module and intensity signals from the microscopic inspection image.

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